DRAFT RULEMAKING SHADING LEGEND

* Shaded text - Rule sections or subsections not suggested for revision. This text is only for reference.

* Unshaded Text - Rule sections or subsections that are suggested for revision.

* Boldface Text – Suggested language additions.

* Strikeout Text – Suggested language deletions.

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10 CSR 10-6.380 Control of NO_x Emissions From Portland Cement Kilns.

Purpose: The purpose of this regulation is to reduce emissions of oxides of nitrogen (NO_x) and ensure compliance with the federal NO_x control plan to reduce the transport of air pollutants. This rulemaking will establish NO_x control equipment and NO_x emission levels for cement kilns.

(1) Applicability

(A) This rule applies to any cement kiln located in the City of St. Louis and the counties of Bollinger, Butler, Cape Girardeau, Carter, Clark, Crawford, Dent, Dunklin, Franklin, Gasconade, Iron, Jefferson, Lewis, Lincoln, Madison, Marion, Mississippi, Montgomery, New Madrid, Oregon, Pemiscot, Perry, Pike, Ralls, Reynolds, Ripley, St. Charles, St. Francois, St. Louis, Ste. Genevieve, Scott, Shannon, Stoddard, Warren, Washington or Wayne that—

1. is a long dry kiln with an actual process rate of at least twelve tons per hour (12 TPH), or
2. is a long wet kiln with an actual process rate of at least ten (10) TPH, or
3. is a preheater kiln with an actual process rate of at least sixteen (16) TPH, or
4. is a precalciner or preheater/precalciner kiln with an actual process rate of at least twenty-two (22) TPH.

(B) Exemptions.

1. Any cement kiln meeting the applicability of section (1)(A) of this rule which has an approved NO_x budget opt-in permit under 10 CSR 10-6.360 is exempted from the requirements of this rule.
2. Section (3) and (4) of this rule shall not apply during startup, shutdown or malfunction conditions as defined in 10 CSR 10-6.050.
3. Section (3) and (4) of this rule shall not apply during regularly scheduled maintenance activities.

(2) Definitions.

(A) Clinker – the product of a Portland cement kiln from which finished cement is manufactured by milling and grinding.

(B) Long dry kiln – a kiln fourteen (14) feet or larger in diameter, four hundred (400) feet or greater in length, which employs no preheating of the feed. The inlet feed to the kiln is dry.

(C) Long wet kiln – a kiln fourteen (14) feet or larger in diameter, four hundred (400) feet or greater in length, which employs no preheating of the feed. The inlet feed to the kiln is a slurry.

(D) Low-NO_x burners – a type of cement kiln burner (a device that functions as an injector of fuel and combustion air into kiln to produce a flame that burns as close as possible to the center line of the kiln) that has a series of channels or orifices that (1) allow for the adjustment of the volume, velocity, pressure, and direction of the air carrying the fuel, known as primary air, and the combustion air, known as secondary air, into the kiln, and (2) impart high momentum and turbulence to the fuel stream to facilitate mixing of the fuel and secondary air. To reduce the amount of primary air used by the low-NO_x burner, an indirect firing system must be used with the low-NO_x burner. An indirect-firing system (1) separates the powdered fuel from the air stream that carried the fuel from the drying/milling equipment, (2) stores the fuel briefly, and (3) uses an independent, significantly smaller stream of hot primary air to blow the fuel to the burner.

(E) Mid-kiln firing – secondary firing in kiln systems by injecting fuel at an intermediate point in the kiln system using a specially designed fuel injection mechanism for the purpose of decreasing NO_x emissions through:

1. the burning of part of the fuel at a lower temperature; and
2. the creation of reducing conditions at the fuel injection point.

(F) Portland cement – a hydraulic cement produced by pulverizing clinker consisting essentially of hydraulic calcium silicates, usually containing one or more of the forms of calcium sulfate as an interground addition.

(G) Portland cement kiln – a system, including any solid, gaseous or liquid fuel combustion equipment, used to calcine and fuse raw materials, including limestone and clay, to produce Portland cement clinker.

(H) Precalciner kiln – a kiln where the feed to the kiln system is preheated in cyclone chambers and that utilizes a second burner to calcine material in a separate vessel attached to the preheater prior to the final fusion in a kiln which forms clinker.

(I) Preheater kiln – a kiln where the feed to the kiln system is preheated in cyclone chambers prior to the final fusion which forms clinker.

(J) Definitions of certain terms used in this rule, other than those specified in this rule, may be found in 10 CSR 10-6.020.

(3) General Provisions.

(A) Beginning May 1, 2007 an owner or operator of any Portland cement kiln subject to this rule shall not operate the kiln during the period starting May 1 and ending September 30, unless each kiln achieves a thirty percent (30%) NOx reduction from projected 1997 base level using one of the following control options:

1. Low-NO_x burners;
2. Mid-kiln firing; or
3. An alternative control technology that is approved by the director and is proven to achieve emission reductions equivalent to paragraphs (3)(A)1. and (3)(A)2. of this rule.

(B) To meet the requirements of paragraphs (3)(A)3 of this rule the owner or operator may take into account as a portion of the required NO_x reductions, physical and quantifiable measures to increase energy efficiency, reduce energy demand, or increase use of renewable fuels.

(C) Monitoring Requirements.

1. An owner or operator complying with paragraphs (3)(A)1. or (3)(A)2. of this rule shall complete an initial performance test by May 1, 2007 and subsequent performance tests, on a tri-annual basis, consistent with requirements of section (5) of this rule.
2. An owner or operator complying with paragraphs (3)(A)3. of this rule shall complete an initial performance test by May 1, 2007 and subsequent annual performance tests consistent with the requirements of section (5) of this rule.
3. An owner or operator may comply with the requirements in paragraphs (3)(C)1. or (3)(C)2. through the use of an alternative compliance method approved by the director prior to modification of the unit.

(4) Reporting and Record Keeping

(A) Reporting Requirements. The owner or operator of a kiln subject to this rule shall comply with the following requirements:

1. By May 1, 2007, the owner or operator shall submit to the director the identification number and type of each unit subject to this rule, the name and address of the plant where the unit is located, and the name and telephone number of the person responsible for demonstrating compliance with this rule
2. The owner or operator shall submit to the director by October 31 of each year an annual report documenting for that unit;
   A. The emissions, in pounds of NO_x per ton of clinker produced from each affected Portland cement kiln during the period from May 1 through September 30;
   B. The results of any performance testing; and
   C. Daily cement kiln production records from May 1 through September 30.
3. If the owner or operator elects to comply with subsection (3)(B) of this rule, the owner or operator will supply, starting April, 2007, the director with a report documenting energy savings as well as measures taken by April 1 for the previous year.

(B) Record Keeping Requirements.

1. Any owner or operator of a unit subject to this rule shall produce and maintain records, which shall include, but are not limited to the date, time and duration of any startup, shutdown or malfunction in the operation of any of the cement kilns or the emissions monitoring equipment.
2. If an owner or operator elects to use subsection (3)(B) of this rule as part of the compliance plan, the owner or operator must retain sufficient to demonstrate emission reductions achieved through energy efficiency improvements.

   All records required to be produced or maintained shall be retained on site for a minimum of 5 years and made available to the director upon request.

(5) Test Methods. NO_x emission level testing shall use one (1) of the following methods as specified by 40 CFR part 60 Appendix A – Reference Methods:

(A) Method 7 – Determination of Nitrogen Oxide Emissions from Stationary Sources;

(B) Method 7A – Determination of Nitrogen Oxide Emissions from Stationary Sources – Ion Chromatographic Method;

(C) Method 7C – Determination of Nitrogen Oxide Emissions from Stationary Sources – Alkaline-Permanganate/Colorimetric Method;

(D) Method 7D – Determination of Nitrogen Oxide Emissions from Stationary Sources – Alkaline-Permanganate/Ion Chromatographic Method; or

(E) Method 7E – Determination of Nitrogen Oxide Emissions from Stationary Sources (Instrumental Analyzer Procedure).